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GUIDELINES FOR THE DESIGN OF AN ES '70 INFORMATION PROCESSING AND PROGRESS MONITORING SYSTEM.

BY- ROSENTHAL, MORRIS
SHELLY (E.F.) AND CO., NEW YORK, N.Y.

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THE COLLECTION, PROCESSING, SYNTHESIZING, AND DISSEMINATION OF DATA ON THE PROGRESS OF ALL EDUCATIONAL SYSTEM (ES) '70 PROGRAMS IS AN ESSENTIAL INGREDIENT IN ACHIEVING THE PROGRAMS' OBJECTIVES. THESE PROGRAMS EMBRACE 17 INDEPENDENT SCHOOL DISTRICTS IN THE PRIMARY NETWORK ALONE AND ARE BASED ON A UNIQUE APPROACH OF "LOCAL-STATE-FEDERAL PARTNERSHIP" WHICH REQUIRES FEEDBACK AND INTERCHANGE OF DATA FOR MONITORING, IMPROVING, AND MODIFYING PROGRAM ELEMENTS. A SUGGESTED INFORMATION SYSTEM DESIGN APPROACH INCLUDES AWARENESS OF THE PROGRAM'S EVOLVING NATURE, THE NECESSITY FOR PARTICIPATION BY OPERATING LEADERSHIP ON ALL LEVELS, REPORTS AND ANALYSES AT VARIOUS LEVELS, AND THE NEED TO WEAVE THE OVERALL DESIGN OF THE SYSTEM INTO THE ES '70 ACTIVITIES, PROGRAMS, AND ORGANIZATIONAL STRUCTURES. THE INFORMATION SYSTEM WILL COLLECT, FILTER, AND DISSEMINATE DATA ON A NUMBER OF LEVELS, SERVING A MULTIPLICITY OF FUNCTIONS. INSTEAD OF A MONOLITHIC SUPERIMPOSED STRUCTURE, IT IS CONCEIVED TO BE STRUCTURED SO AS TO ENCOURAGE CONSISTENT, FLEXIBLE, AND CONTINUOUS COLLECTION, PROCESSING, AND INTERCHANGE OF PERTINENT DATA FOR USE ON AN INTERDISTRICT, INTERSTATE BASIS. AN IMPORTANT ELEMENT OF THIS COMMUNICATION SYSTEM WOULD BE THE ESTABLISHMENT OF A DATA RECORDING, PROCESSING, AND DISTRIBUTION SYSTEM THAT WOULD BE CAPABLE OF MONITORING THE ENTIRE PROGRAM AND FEEDING BACK RESULTS WHICH WOULD OPTIMIZE THE SELF-CORRECTING NATURE OF SUCH A SYSTEM. THIS DOCUMENT IS AN EXTRACT FROM ONE SECTION OF THE MATERIAL PREPARED FOR THE MEETING OF THE ES '70 NETWORK SUPERINTENDENTS (ATLANTA, FEBRUARY 16-17, 1968). (EM)

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Guidelines for the Design of an ES '70 Information Processing and Progress Monitoring System

by

Morris Rosenthal

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866 UNITED NATIONS PLAZA, NEW YORK, NEW YORK 10017 • PLaza 1-0432

Guidelines for the Design of an ES '70 Information Processing and Progress Monitoring System

The collection, processing, synthesizing and dissemination of data on the progress of all ES '70 programs is an essential ingredient in achieving the program objectives. The development of an information system to meet the needs of the program must take place concurrently with, and flow from the ES '70 system design as it progresses. The complex of interrelationships and dependencies, in both the organizational-administration area and in the program-functional area, must be reflected in the systems analysis and design of the information system.

A program embracing seventeen independent school districts in the primary network alone, a program based upon a unique approach to the "Local-State-Federal Partnership" in education, which comprises significantly new educational programs and approaches requiring timely feedback and interchange of data for dynamic monitoring, improving and modifying of program elements, presents information processing problems of great complexity.

The solution of these problems, however, as reflected in the eventual information systems design, lies not in the direction of luxurious contemplation of the problems by information specialists working INDEPENDENTLY of the operating

Certain guidelines for the design of the ES '70 information system are already apparent:

1. The information system will collect, filter and disseminate data on a number of levels, serving a multiplicity of functions. Of immediate and continuing priority is the need to monitor the progress of the program, illuminating areas requiring attention by appropriate officials. The progress monitoring function of the information system is the immediate concern of this paper.

2. The term "information system" may present to some a vision of a rigid, monolithic structure superimposed on the participating ES '70 school systems. Such an approach would surely fall. Rather, the information system is conceived to be structured in such a manner as to:

   a. Encourage consistency in the collection, processing and interchange of pertinent data for use on an interdistrict, interstate basis

   b. Be flexible enough to use, build upon, and enrich the information processing now going on in the local areas. Each district has its own information handling approaches, varying in method,

application areas, degrees of sophistication, use of machine aids including electronic data processing, etc. It is conceived that the ES '70 information system will have sufficient sophistication to accept this diversity.

c. Continuously exert a unifying influence toward compatibility (as an alternative to uniformity) through standardization of formats and reports for those elements of information directly relating to ES '70 goals, or having value on an interdistrict, state or national level.

d. Suggest new information processing techniques and approaches to a district or a school--approaches based upon proven, working systems (or parts of systems) in other parts of the ES '70 network. Thus, some elements of a student evaluation or guidance system, or an attendance or scheduling operation already working in one district might have validity for another; other elements might need modification or further development to meet particular local conditions. An ongoing function, then, of the ES '70 information system would be to aid in the transfer and adaptation of advanced information techniques throughout the ES '70 network.

e. Present information to participating schools and districts on innovative monitoring, processing and evaluating techniques pertinent to the goals of ES '70. Such information would cover pilot projects (and operational systems) which used the most modern data processing methods in the areas of administrative aids and educational management, instructional aids including computer-assisted instruction, pupil evaluation and guidance, simulation and model building, etc. Assistance would be provided to the districts for realistic assessment of various data processing choices available today (and tomorrow), including the use of shared computers, regional data processing centers and data communication alternatives. The objective here would be to avoid "redesinging the wheel" to use and, perhaps, expand on promising, or already proved experimental work with relevance to the ES '70 program.

f. Assist the districts to initiate and implement projects in information areas particularly related to the ES '70 goals. It is obvious that computer assistance of a unique and innovative nature will be invaluable in many areas. But it can be said

that such assistance will be essential in at least one area: to provide, finally, education truly directed to the level and needs of the individual student.

The anomaly exists of the impersonal machine providing the means by which the educator may provide the most effective, personalized education within the ES '70 program:

-- Instructional objectives and performance objectives, identified, classified, codes within disciplines and synthesized with other disciplines, will be linked to modules of instruction and, in turn, to occupational--career clusters associated with the objectives and instructional modules.

-- Machine linking of defined objectives, instructional modules, information on teaching and materials resources, career objectives and opportunities, new guidance counseling techniques, together with application of advanced evaluation and measurement aids to guage the students' progress (and a program's) progress will present the educator with valuable assistance in achieving the ES '70 end objectives.

-- The number of uses to which modern data processing technology may be applied within the ES '70 complex are boundless: from cataloging, indexing, correlation of instructional objectives, as they are defined, to experimentation in developing appropriate weights and measures in evaluating individual student progress; from developing career profile reports furnished to individual students each year,to providing the means by which "scheduling" of a nongraded school may be accomplished, etc.

To summarize, then, the interchange of information within each school system and among the participants in the overall program is a vital part of the program. Conferences, task forces, training programs and related group processes will be employed to provide the face-to-face interaction necessary to good communication. Publications and reports will also be employed to speed the exchange of ideas and to put significant experiences before appropriate audiences.

An important element of the communication system would be the establishment of a data recording, processing and distribution system that would be capable of monitoring the entire program and feeding back results in a manner that would optimize the self-correcting nature of such a system. It is also vital that links be established between the world of work,

the world of youth and the educator and program developer. Efforts will be made to bridge these gaps and provide the information needed to improve the program and avoid narrowness and isolation.

The overall objective will be to maximize the appropriate exchange of information without disabling participants with burdensome reading or record keeping. Important goals will be to minimize the repetition of error and to increase the availability of successful experience so as to multiply its effect. The communication system will itself be subject to the need for feedback to improve its efficiency and its utility.

Generally, the information and data-gathering system employed within the school system must consider:

1. What kinds of data will be needed in and out? (by curriculum developers and administrators, etc.)
2. What kinds of data will be needed for later application?
3. What kinds of data will be needed for evaluation; e.g., obtaining critical differences between techniques or populations.
4. At what points in time or levels should data be collected?
5. What protection must be offered to the privacy of the individual when large amounts of detailed data are collected?

The potentials of advanced information processing for ES '70 stagger the imagination. It is anticipated that operating leadership will assign priorities for new information processing projects as the ES '70 detailed program definition proceeds. Methodical yet imaginative and flexible systems analysis and design will unfold new information needs and new processing approaches which should have significant capability for transfer and use in many areas of education.